

PROCEEDINGS

of the
American Society
of
Civil Engineers

2 PARTS

PART 2

Vol. LIV

FEBRUARY, 1928

No. 2

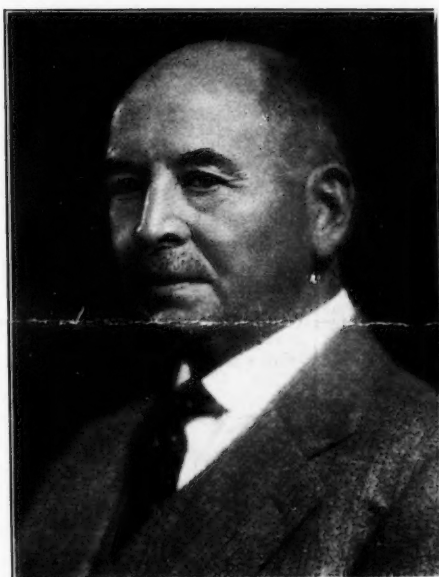
Lincoln Bush

THE new President hails from Illinois, as perhaps his name might suggest. That great State knew Lincoln better than most others and there the name connotes more than a passing thought; it has a real native significance.

Lincoln Bush was brought up on a farm but aspired to a larger field. First, his idea was to teach and to this end he exhausted the educational resources of his locality, attending the public schools and the Normal School in Cook County. Indeed, subsequently he taught for several years before he decided to become a student himself again.

He attended the University of Illinois, graduating in 1888. After two years of railroading in the West, he returned to the University as Instructor. The University showed that it appreciated his services and later success when in 1904 it made him an honorary Doctor of Engineering. After a brief period of teaching he entered another field, that of bridge engineering, which was to absorb his activities for many years.

Various positions in the Middle West acted as stepping stones, leading finally to the office of Bridge Engineer for the Delaware, Lackawanna and Western Railroad. During the succeeding years this road embarked on an era of tremendous betterments; an extensive program of new structures and line improvements was undertaken. The Bridge Engineer became Principal Assistant Engineer and finally Chief Engineer of the road. During this period also the Bush Train-shed was evolved, an umbrella type of short-span structure that has been universally used since then by many other railroads for



LINCOLN BUSH
President, Am. Soc. C. E.

covering tracks and platforms.

Since 1909 Mr. Bush has devoted most of his time professionally to consulting engineering and to contracting especially in the fields of railroads and bridges, his special line of work. During the World War his abilities were recognized by important duties in the Quartermaster's Corps, in charge of large storehouse and terminal port construction totaling hundreds of millions of dollars in value. Here it was that he earned his commission as Colonel, by which title he is still known among his intimates.

Characteristic of the man during all these years has been an intense loyalty to the Society. Until the current year there has been only one honorary office that he has not held and now even that is his. Success-

(Continued on page 4)

Annual Meeting

TOTAL Registration at the Annual Meeting about 1800! The old time member will open his eyes to see how the Society grows. Attendance means interest and interest means better sessions.

This was characteristic of the meeting just completed. The various programs deserved the enthusiastic attention they received. They did not attempt to cover too much ground so that what subjects were selected were treated adequately. The problem of the visiting member was not where he wanted to go but rather how he could afford to miss all but one of the Division Meetings.

Numerous representatives from Student Chapters were in evidence. One group came from as far as Eastern Pennsylvania and all expressed themselves as well repaid for their efforts.

Then there were two good exhibits which proved a great attraction. Hardly a visitor failed to find his way to the Eighth Floor to study a splendid display of surveying instruments and city planning maps, and in adjoining rooms a series of excellent bridge models, faithfully reproducing old and modern types. To the Technical Divisions also belongs the credit for this valuable addition to the Meeting.

More than the usual number of ladies graced the business meeting, adding color and a sentimental touch to the proceedings. For instance, Mrs. Rudolph Hering was justly proud to see the first presentation of the Rudolph Hering Medal. There was also Mrs. Edward P. North, well known for the activities of her late husband a generation ago.

The dinner, entertainment, and excursions all deserve glowing reports instead of passing mention. But no account, least of all such a brief story, could do adequate justice.

A Real Service

THE unusually large size of recent "Proceedings" has been noted already in preceding issues. The result has been a record size for the year 1927. Of course, this large amount of technical matter has included both original papers and discussions.

As to the papers, they have been the result of a previous accumulation which for a time grew faster than the facilities for putting them in type. Hence this part of the enlarged "Proceedings" is not the result of recent unusual interest or efforts on the part of members.

As to the discussions, however, the case is different. The fact that approximately 350 discussions by various members were submitted during the year shows an active interest on the part of this number of people. Many think that the special value of the publications is in dispensing information from many sources on special subjects. If so, the past year has been a great success.

The total material in "Proceedings" devoted to discussions has amounted to 950 pages, a fair sized volume in itself. The average length of the discussions, about $2\frac{3}{4}$ pages, indicates that in general they were substantial contributions, and not mere passing comments or complimentary effusions. These 350 men have therefore been of real service to their fellows. They have thrown valuable light from many directions on subjects of current moment to engineers. "In the multitude of counsellors there is safety."

Extra "Transactions" Vol. 89 Needed

MEMBERS may be fairly divided into two classes, those who do, and those who do not, find a definite use for their "Transactions." At the moment the "ayes" seem to have it. Not only is the stock of Vol. 89 exhausted, but there are on hand urgent requests for additional copies.

An appeal is therefore made for such personal help as may not demand any great sacrifice on the part of an individual member, but which may mean a great boon to some one else.

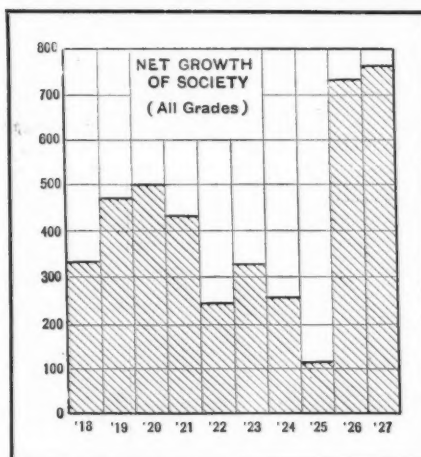
In brief, it is suggested that any members who do not expect to use Vol. 89 of "Transactions," especially

the paper bound copies, might be glad to return them that they may be given to some who cannot otherwise be supplied. Needless to say, the Society would expect to pay the shipping charges.

Some months ago, a Japanese engineer was in a similar difficulty, and was kindly assisted by an American member. Although the need in the present instance is on the part of Americans, it is just as real and therefore may appeal to those who feel they could spare this volume without loss.

1927 Membership Record

WITH the close of the year, it becomes necessary to evaluate the trend of membership changes. Of course, the first question that would arise concerns the net effect on total



The shaded portion of the graph shows the fluctuation in Society membership during a decade, and notably the remarkable increase for the past two years

members. Was it up or down? The answer is "decidedly up." By comparison with the previous ten years, the net increase is marked as the diagram shows.

As to the components of this increase the figures show a similar upward trend as compared with previous years. Applicants for admission accumulated during 1927 to the number of 1389. Many of these qualified, others were reinstated, the total number of additions being 1138. The number of withdrawals, of those dropped for non-payment of dues, and of deaths, resulted in a net increase in membership of 755, a record figure.

Analyzing still further, it appears

that the net growth is almost "fifty-fifty" as between new Junior Members and new Corporate Members. This relatively high proportion of Juniors is natural as the losses by deaths, resignation, and other causes which reduce the net gain, are mainly from among the older classes of membership.

Congestion

THE first two weeks of January is a busy time for the Headquarters Staff, more particularly for the Office Manager and the Bookkeeper and his three assistants. The 1st, 8th, and 15th of January this year were Sundays on which (theoretically) no work was done. The 2nd was a holiday on which (of course) no work was done.

In the remaining eleven days in addition to carrying on the routine incident to the receipt of checks at the rate of approximately 250 a day with the attendant bank deposits, ledger entries, receipted bills, etc., it was necessary to close the books of the previous year in preparation for the financial audit.

For years the Society has employed the same firm of auditors. Notwithstanding their familiarity with our books they find it necessary to assign two men to the audit and these two have all they wish to do for a period of four days or more.

Prior to this time the Society's bookkeeping staff must of necessity have completed its work in so far as the annual analysis went. The Treasurer and Secretary had accounted for securities in hand, and as complete as possible a draft of the Annual Report had gone to the printer.

The Report was required in printed form ready for the Board of Direction at its meeting on the 16th and several hundred copies corrected in every particular had to be in the hands of the membership on the morning of the 18th.

The Annual Report contains, in the main, statistics of all matters relating to the previous calendar year. Its completion, in consequence, calls for up-to-the-minute data in all departments.

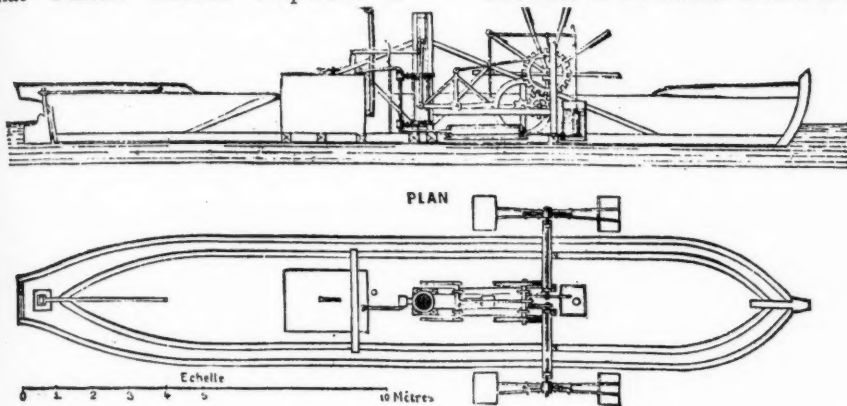
Meanwhile, plans went forward actively for other phases of the Annual Meeting; preparation of tickets, seating lists for the Dinner Dance, arrangements for the Excursion, etc., etc., a long list of minutiae.

Napoleon, Fulton, Rennie, et al

SEVERAL members have commented on various phases of the story regarding John Rennie and Napoleon. In the December number, the thought was advanced that Fulton offered Napoleon a

house, a famous beacon on the Scottish Coast associated with the likewise famous Inchcape Ledge. A member writes to suggest that Robert Stevenson, noted grandfather of an even more noted grandson, Robert Louis Stevenson, built this structure. Stevenson himself took much of the credit.

The fact of the matter seems to be,



steamboat to help him conquer England. The January issue went to show that this "steamboat" was probably a submarine hand-propelled. In the matter of accuracy, it now appears that both views are in part correct.

There is no question but that Fulton offered the submarine to Napoleon. The question is, did he also offer the steamboat? Some historians say "yes"; some say "no." That he actually had in mind the steamboat at this time is conclusively proven by the records. A sketch of this boat taken from the French is reproduced herewith (thanks to C. E. Fowler, Member.) This is the craft that Fulton built on the Seine and tried out there. Incidentally, it was not strong enough for the strain of the machinery and broke in pieces, sinking to the bottom of the river. Previously, however, it had been examined by a Committee from the French Academy.

This Committee may, or may not, have represented Napoleon, although certainly he must have had much knowledge of, and large interest in, the matter. On such a consideration rests the question whether Napoleon really had the opportunity of using this wonderful invention, which only a few years later came to fruition on the Hudson River.

Still another question raised in this same connection is also of historical interest. The original story stated that Rennie was in charge of the construction of the Bell Rock Light-

house, a famous beacon on the Scottish Coast associated with the likewise famous Inchcape Ledge. A member writes to suggest that Robert Stevenson, noted grandfather of an even more noted grandson, Robert Louis Stevenson, built this structure. Stevenson himself took much of the credit.

Both Rennie and Fulton were more or less contemporaneous. Indeed they may have, and probably did, meet during Fulton's brief stay in England, about 1803 or 1804. As far-seeing engineers, their records remain secure. Even the light of recent developments finds little to detract from the wonder of their careers.

A New Name

TELEPHONE conversations have been the subject of many irritating and some amusing misunderstandings. In the latter category is the result of a talk at Headquarters, from which the party on the other end of the wire concluded that she was talking with the "American Society of Souvenirs."

This may remind some one of the mementoes carried away from many of the Annual Meetings; for example, the ever-present (years ago) long-stemmed wooden pipes. Otherwise, the aspersion of this name may be indignantly denied.

February Proceedings

THE distinguishing feature of the technical papers in the February Proceedings is variety of subject matter. This ranges from engineering administration through construction, water-works, structural theory, waterways and so to foundation materials and engineering maintenance.

Opening the issue, Ward P. Christie, Associate Member, in a paper "General Contract System Versus Segregated Contracts," emphasizes a special form of engineering economics. He contends that centralized management with all its drawbacks is still the most desirable.

To develop the subject of "The O'Shaughnessy Dam and Reservoir," three Members have contributed, John H. Gregory, C. B. Hoover and C. B. Cornell. This important work, recently completed for the City of Columbus, has a dam about 1000 ft. long, and a reservoir for 5,000,000,000 gal. capacity.

Supplementing this description of storage works, Charles P. Hoover, Chemist for the City, describes "The Treatment of the Water Supply for the City of Columbus, Ohio."

In his paper "Crown Stresses in a Skew Arch," J. Charles Rathbun, Member, describes experiments aimed to verify theoretical derivations. Engineers will be glad to know that this important but complex engineering structure seems to be adaptable to the theoretical analysis previously given.

The question of "Inlets on Sandy Coasts" is treated by Earl I. Brown, Member, quite completely. Various factors affecting their formation, growth, movement, and control are clearly emphasized.

The paper, "The Compressibility of Sand-Mica Mixtures" is by a Junior Member, Glennon Gilboy. He shows "that any system of analysis of classification of soils which neglects the presence and effect of the flat grain constituents will be incomplete and erroneous."

The "Silting of the Lake at Austin, Texas," as detailed by T. V. Taylor, Member, is almost unbelievable. After thirteen years less than 5% of the original volume remains.

Supplementing these excellent papers are a number of valuable discussions (34 in all), dealing with 18 papers previously published. The memoirs of deceased members are included. These number 5.

"A Landmark in History"

A REMARK most significant to the Engineering Profession is made by Mr. Mark Sullivan in his article appearing in "The Sunday Constitution Magazine" of January 8th last. The author of "Our Times," and "The Turn of the Century," commenting on "Politics in 1928," queries: "Will Prohibition, Religion, or Farm Relief Be Our Outstanding Issue, or Will It Be Something Entirely Unforeseen by the Prophets?"

The significance to us as engineers, however, lies in Mr. Sullivan's concluding paragraph. He says:

"I suspect the future historian will treat the Coolidge and Harding administrations as one. Probably he will add several future administrations to them and group all as a new era. The symbol of the change he will probably find in an event—the presence for the first time of a man with the letters C. E. (civil engineer) after his name in the higher circles of politics. The man happened to be Hoover. It might have been some one else. A democrat, Owen Young, would have the same significance. The thing that Hoover symbolized—the recognition of the immensely exalted role of science in social and political organization—that is what will be recognized as constituting a landmark in history."

Although Mr. Hoover is an Honorary Member of the Society, his training and experience are that of a Mining Engineer. However, that's beside the issue. The point, it seems, is Mr. Sullivan's shrewd suggestion that the entrance of engineering into public administration will be recognized as "constituting a landmark in history."

Soils Studies

FOR years the elusive determinations of bearing power in soils has been under study by a Society Committee. This work has now undergone a change both as to personnel and character.

Originally the Committee was authorized on December 3, 1912. Subsequently it made extensive studies and submitted several valuable reports in the years 1914, '15, '16, '17, '18, '19, '20, '24, and '26, besides many discussions to various papers during the same years.

Now the thought is that this important work should be continued, supplementing the data already available with laboratory tests. These investigations would ascertain the physical properties and behavior of

the many soil formations familiar to engineers.

The idea in mind is that ultimately a satisfactory procedure may be developed for treating all problems of foundations. Involved in these studies will be the attempt to find a method of identifying the soils and their physical properties so that an intelligent forecast may be made of their proper behavior under load.

Those who know the difficulties of this entire subject, and yet the ultimate value that the solution will provide, will desire to yield every possible assistance to the Committee in its new work. The personnel of this new Special Committee on Soils includes the following members of the Society: Messrs. Charles R. Gow, *Chairman*, Allen Hazen, E. G. Haines, E. P. Goodrich, and George W. Kittredge.

Lincoln Bush

(Continued from page 1)

sively, he has been Director, Treasurer, Vice-President, and President. A generation ago the late J. James R. Croes had a similar record, but other than for these two men the experience is unique.

In one other important respect, however, Col. Bush has gone even further. It doesn't appear on the records, but it is nevertheless true that to all intents and purposes he acted as Secretary of the Society for several months. As this brief period included one of his greatest services the circumstances, although sad, are enlightening.

Late in June, 1924, he with a number of members and officers returning from the Pasadena meeting, underwent a harrowing experience in a train wreck at Buda, Ill. Secretary Dunlap suffered injuries to which he succumbed a month later in Chicago. Meanwhile, Col. Bush took much of the responsibility. He put aside his own plans in order to stay in Chicago with the sick man, and not until everything possible had been done and arranged, did he continue to his home. Even after Mr. Dunlap's death he did perhaps more than any other one member in helping to settle the estate.

"I hold every man a debtor to his profession; from the which, as men of course do seek to receive countenance and profit, so ought they of duty to endeavor themselves by way of amends to be a help and ornament thereto."

FRANCIS BACON

Pending the election of a new Secretary, the Board of Direction conceived the idea that one of its members should co-operate with the Headquarters Staff in "carrying on." Lincoln Bush, as Resident Vice-President, was the man. Certainly no one was better fitted, nor as events proved, better able to do this. Daily for the remainder of the year he brought a clear counsel and wide judgment to bear upon the administrative problems of the Society.

Naturally, a man imbued with the highest ideals of his organization, with ripe experience and a willingness to serve is impressed into numberless duties. Many of these in Col. Bush's record are known only to the various Boards, Committees, and Conferences concerned.

Time and again he has been called and never has he refused. He has not been especially singled out for purely honorary posts but rather for those where work and thought and tact of more than ordinary amount were involved. It is significant that Lincoln Bush has always actually done the work required. His is not the "rubber-stamp" variety of co-operation. The field of Society business has felt his intense interest and acumen. He has delved deep into legal and financial matters, always as a quiet but thorough analyst on behalf of the Society.

It seems that every one has faith in Lincoln Bush. A mild but affable manner, a cheery outlook on life, and a predominant sociability are outward and endearing traits. But deeper are the characteristics that show only through experience, the knack of going to the bottom of things, a tempered but absolutely reliable judgment, and a native soundness of thought and action.

During years of attendance at Society events he and Mrs. Bush have made a wealth of friends who can congratulate them and the Society in the presidential choice. One forecast is perfectly plain—the coming year will add much to the acquaintance and popularity of Col. Bush. And the signs are equally conclusive that the year will detract none from the prestige of the eminent office.